

March 3, 2020

Mr. Tom Mullins Issaquah School District Director of Capital Projects 565 NW Holly Street Issaquah, WA 98027

Via email: MullinsT@isssaquah.wednet.edu

Regarding: Water Tower Lead in Soil Screening Summary

4221 228<sup>th</sup> Ave SE Issaquah, Washington PBS Project 40115.046

Dear Mr. Mullins:

On Friday, January 31, 2020, PBS Engineering and Environmental, Inc. (PBS) performed additional limited lead survey of soils in the area beneath and surrounding the Water Tower and associated ground structures at 4221 228<sup>th</sup> Ave SE in Issaquah, Washington. This additional survey followed a preliminary limited hazardous materials survey report completed on October 24, 2019<sup>1</sup>, with the purpose of more precisely determining the extent of lead contamination in soils at the site. The sampling included collection of soil samples and use of a handheld X-Ray Fluorescence (XRF) field instrument to screen soils.

### **PREVIOUS SOIL SAMPLING**

On August 13, a total of four discrete soil samples were collected from separate locations around the Water Tower's base. This sampling was conducted solely as a screening tool to help evaluate engineering and site controls during excavation work, determine the level of personal protection equipment (PPE) that may be required during the planned work on site, and to gauge requirements for disposal/re-use of the excavated soil.

Samples were submitted with chain of custody documentation to NVL Labs in Seattle, Washington. All samples were analyzed for total lead according to EPA Method 3051/7000B. Lead was detected in all of the four initial soil samples collected in concentrations ranging from 82 mg/kg to 1500 mg/kg.

Additional soil sampling was performed on October 1, 2019. Four additional composite samples were collected to a depth of approximately 12" below grade at the previous sampling sites. Six additional composite samples were collected to a depth of approximately 6" below grade at three to five yards outside the perimeter of the tank structure above.

Lead was detected in all of the four samples collected at previous sampling sites to 12" below grade in concentrations ranging from 59 mg/kg to 140 mg/kg. Lead was detected in one of the samples collected from the tank perimeter (southwest side) to a depth of 6" below grade at a concentration of 100 mg/kg. Lead was not detected above analytical limits of detection in the other samples collected outside the perimeter of the tank structure.

<sup>&</sup>lt;sup>1</sup> "Preliminary Limited Hazardous Materials Survey Report", PBS Project 41517.046, October 24, 2019.

Issaquah School District Water Tower Lead in Soil Screening Summary March 3, 2020 Page 2 of 3

### **ADDITIONAL SOIL SAMPLING**

On January 31, 2020, a total of twelve discrete soil samples were collected from separate locations around the site, including four from outside the fence north of the tower, six samples taken in sets of three between 0-6", 6-12", and 12-18" below ground surface between the tower, and two taken south of the tower. Five of these samples were selected to be analyzed for total lead: two outside the fenced area of the tower, two from beneath the tower taken between 6-12" below ground surface, and one from a location approximately 10 yards south of the tower.

Samples were submitted with chain of custody documentation to NVL Labs in Seattle, Washington. All samples were analyzed for total lead according to EPA Method 3051/7000B.

- Lead was detected in one of the samples taken between 6-12" below ground surface.
- Lead was not detected above analytical limits of detection in the other four analyzed samples which were collected outside the perimeter of the tank structure.

All sample locations are shown on figure 1.

### HANDHELD XRF FIELD SCREENING

A handheld XRF field instrument was used to screen soils for the presence of lead at sixteen locations across the site. A shovel was used to expose soil between 0-3" below ground surface, and the XRF was used to determine the concentration of lead in these exposed soils. Locations were chosen to assist in delineating the lateral extent of lead contamination. These locations are shown on figure 1.

The XRF unit reported lead concentrations of up to 138 parts-per-million (ppm, equivalent to mg/kg) lead, this highest concentration being located beneath the water tower. The XRF unit reported up to 10 ppm lead at locations outside the water tower footprint.

### **CONCLUSIONS AND RECOMMENDATIONS**

Analytical results from discrete soil samples collected at the property in association with planned improvements identified lead concentrations above the adopted clean up criteria level for lead contamination at one location. Lead concentrations at or above the adopted criteria for "dangerous waste" characterization were identified at the same and two additional sample locations.

 Based on laboratory results and the XRF field screening, the extent of lead contamination appears to be limited to the footprint of the water tower and approximately 12" below ground surface.

PBS recommends treating soils from the footprint of the water tower area as lead contaminated to a depth of approximately 12" below ground surface. Any soil removed from this area during construction should be segregated and stockpiled until it can be sampled, characterized for disposal, and properly disposed of at a facility permitted to accept such material.

Once the specified excavation work in the affected zone is complete the stockpiled soils should be tested using the TCLP waste characterization analysis to determine disposal requirements. Collection of total lead samples from the resulting excavations should also be performed to confirm site conditions to remain.

Issaquah School District Water Tower Lead in Soil Screening Summary March 3, 2020 Page 3 of 3

Additionally, PBS recommends providing the general contractor all pertinent information regarding lead in soils. Preparation of a lead in soils management plan is also recommended. The contractor will be responsible for requirements to ensure a safe work environment: worker protection (PPE), housekeeping, engineering controls, etc.

Report prepared by:

Digitally signed by Nathan Dickey Date: 2020.03.03 12:59:53 -08'00'

Nathan Dickey Staff Geologist Report reviewed by:

Digitally signed by Tim Ogden

Tım Ogden

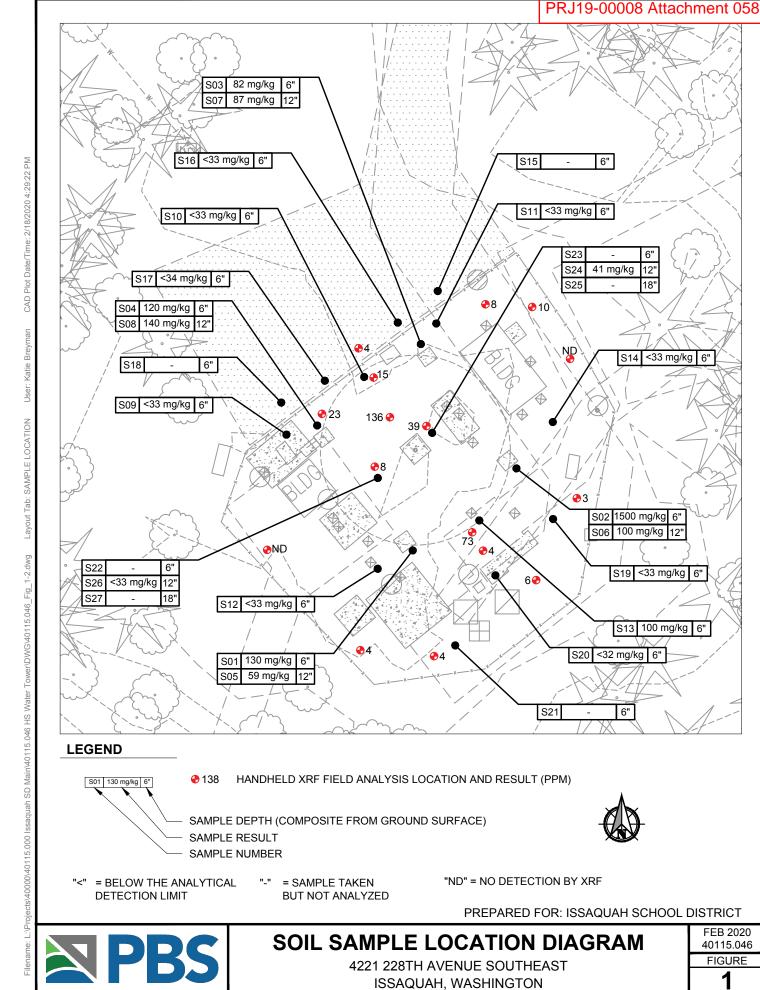
Principal, Senior Project Manager

Attachment(s): Figure 1. Soil Sample Location Diagram

Appendix A. Laboratory Reports

PRJ19-00008 Attachment 058

**Figures** 



FEB 2020 40115.046 **FIGURE** 

PRJ19-00008 Attachment 058

Appendix A
Laboratory Reports

INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

August 20, 2019

Tim Ogden **PBS Environmental - Seattle**214 E Galer St. Suite. 300

Seattle, WA 98102

RE: Metals Analysis; NVL Batch # 1917640.00

Dear Mr. Ogden,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Preparation of these samples was conducted following protocol outlined in EPA Method SW 846-3051 unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm), Percent (%) or mg/cm² by area. Dust wipe sample results are usually expressed in ug/wipe and ug/ft². TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and ug/m³. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested and are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. if you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

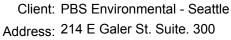
Shalini Patel, Lab Supervisor

Enc.: Sample results



# **Analysis Report**

**Total Lead (Pb)** 



Seattle, WA 98102

Attention: Mr. Tim Ogden

Project Location: HS Water Tower - Issaquah SD



Batch #: 1917640.00

Matrix: Soil Method: EPA 3051/7000B Client Project #: 40115.046

Date Received: 8/16/2019 Samples Received: 4 Samples Analyzed: 4

Lab ID	Client Sample #	3ample Wt (g)	RL mg/ kg	Results in mg/Kg	Results in ppm	
19095610	40115.046-S01	0.2973	34	130	130	
19095611	40115.046-S02	0.2974	34	1500	1500	
19095612	40115.046-S03	0.2953	34	82	82	
19095613	40115.046-S04	0.2930	34	120	120	

Sampled by: Client

Analyzed by: Ruth Schumaker Date Analyzed: 08/20/2019 Reviewed by: Shalini Patel Date Issued: 08/20/2019

Shalini Patel, Lab Supervisor

'<' = Below the reporting Limit

mg/ kg = Milligrams per kilogram ppm = Parts per million

Note: Method QC results are acceptable unless stated otherwise.

Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2019-0820-2

FAA-03 page 2 of 4

Company	PBS Environmental - Seattle	<b>NVL</b> Batch I	Number 1	917640.	.00
Address	214 E Galer St. Suite. 300	TAT 2 Day	ys.		AH No
	Seattle, WA 98102	Rush TAT_			
Project Manager	Mr. Tim Ogden	Due Date	8/20/2019	Time	1:10 PM
Phone	(206) 233-9639	Email tim.o	gden@pbsu	ısa.com	
Office:	(800) 628-9639	<b>Fax</b> (866)	) 727-0140		

Project Name/Number: 40115.046	Project Location: HS Water Tower - Issaquah SD
Subcategory Flame AA (FAA)	
,	PA 7000B Lead by FAA <soil></soil>

#### **Total Number of Samples** Rush Samples \_ Lab ID Sample ID Description A/R 19095610 40115.046-S01 Α 2 19095611 40115.046-S02 Α 3 19095612 40115.046-S03 Α Α 4 19095613 40115.046-S04

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				
Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	8/16/19	1310
Analyzed by	Ruth Schumaker		NVL	8/20/19	
Results Called by					
Faxed Emailed					
Special Instructions:		'	·	`	

Date: 8/16/2019 Time: 1:40 PM Entered By: Kelly AuVu



# LABORATORY CH. PRJ19-00008 Attachment 058

Project: HS Water Tower – Issaqua	ah SD	Project #:_40115.046
Analysis requested: Soils - Lo	ead	Date: 8/13/19 8/16/19
Relinq'd by/Signature:	<b>X</b>	Date/Time: 8/13/19 8/16/19 04 //>
Received by/Signature: Felly Awlu	eoul	Date/Time: Lelly Auth 8/16/19
E-mail results to:		1010
☐ Brian Stanford		☐ Mike Smith
☐ Willem Mager	☐ Janet Murphy	Ferman Fletcher
Gregg Middaugh	☐ Kaitlin Soukup	☐ Holly Tuttle
Mark Hiley	Martin Estira	Ryan Hunter
	☐ Justin Day	Eman Jabali
☐ Prudy Stoudt-McRae	Filmon Embaye	
TURN AROUND TIME:		
1 Hour	24 Hours	☐ 3-5 Days
2 Hours	48 Hours	Other 2-Day TAT
4 Hours		0

	SAMPLE DATA FORM				
Sample #	Material	Location	Lab		
40115.046-S01	Soil Sample - Lead	Water Tower, base of column, SW	NVL		
40115.046-S02	Soil Sample - Lead	Water Tower, base of column, SE	0 1		
40115.046-S03	Soil Sample - Lead	Water Tower, base of column, NE			
40115.046-S04	Soil Sample - Lead	Water Tower, base of column, NW	V		



October 4, 2019

Tim Ogden **PBS Environmental - Seattle**214 E Galer St. Suite. 300

Seattle, WA 98102

RE: Metals Analysis; NVL Batch # 1921255.00

Dear Mr. Ogden,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Preparation of these samples was conducted following protocol outlined in EPA Method SW 846-3051 unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm), Percent (%) or mg/cm² by area. Dust wipe sample results are usually expressed in ug/wipe and ug/ft². TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and ug/m³. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested and are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. if you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Yasuyuki Hida, Laboratory Analyst

Jasumi Hise

Enc.: Sample results



# Analysis Report

Total Lead (Pb)

Client: PBS Environmental - Seattle Address: 214 E Galer St. Suite. 300

Seattle, WA 98102

Attention: Mr. Tim Ogden

Project Location: HS Water Tower - Issaquah SD



Batch #: 1921255.00

Matrix: Soil

Method: EPA 3051/7000B Client Project #: 40115.046 Date Received: 10/3/2019 Samples Received: 10

Samples Analyzed: 10

Lab ID	Client Sample #	Sample Wt (g)	RL mg/ kg	Results in mg/Kg	Results in ppm	
19116960	40115.046-S05	0.3091	32	59	59	
19116961	40115.046-S06	0.3180	31	100	100	
19116962	40115.046-S07	0.3031	33	89	89	
19116963	40115.046-S08	0.3096	32	140	140	
19116964	40115.046-S09	0.3024	33	< 33	< 33	
19116965	40115.046-S10	0.3006	33	< 33	< 33	
19116966	40115.046-S11	0.3036	33	< 33	< 33	
19116967	40115.046-S12	0.2988	33	47	47	
19116968	40115.046-S13	0.3016	33	< 33	< 33	
19116969	40115.046-S14	0.3009	33	< 33	< 33	

Sampled by: Client

Analyzed by: Shalini Patel Date Analyzed: 10/04/2019 Reviewed by: Yasuyuki Hida Date Issued: 10/04/2019

Yasuyuki Hida, Laboratory Analyst

RL = Reporting Limit

'<' = Below the reporting Limit

Jasum 6

ppm = Parts per million Note : Method QC results are acceptable unless stated otherwise.

Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2019-1004-06

mg/ kg = Milligrams per kilogram

FAA-03



Α

Α Α

Company PBS Environmental - Seattle	NVL Batch Number 1921255.00
Address 214 E Galer St. Suite. 300	TAT 2 Days AH No
Seattle, WA 98102	Rush TAT
Project Manager Mr. Tim Ogden	<b>Due Date</b> 10/7/2019 <b>Time</b> 1:10 PM
Phone (206) 233-9639	Email tim.ogden@pbsusa.com
Office: (800) 628-9639	Fax (866) 727-0140

Project Nan	ne/Number: 40115.04	6 Project Location: HS Water Tower - Issaquah SD
Subactagom	Flome AA (FAA)	
Subcategory	Flame AA (FAA)	
Item Code	FAA-03	EPA 7000B Lead by FAA <soil></soil>

#### **Total Number of Samples** 10 Rush Samples \_ Lab ID Sample ID Description A/R 19116960 40115.046-S05 Α 19116961 40115.046-S06 Α 3 19116962 40115.046-S07 Α 4 19116963 40115.046-S08 Α 5 19116964 40115.046-S09 Α 6 19116965 40115.046-S10 Α 7 19116966 40115.046-S11 Α

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				
Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	10/3/19	1310
Analyzed by	Shalini Patel		NVL	10/4/19	
Results Called by					
☐ Faxed ☐ Emailed					
Special Instructions:		'			

Date: 10/3/2019 Time: 1:16 PM Entered By: Kelly AuVu

8

9

19116967

19116968

10 | 19116969

40115.046-S12

40115.046-S13

40115.046-S14



## LABORATORY CH

Project: HS Water Tower – Issaqua	ah SD	Project #: 40115.046
Analysis requested: Soils – L	ead	Date: 10/1/19
Relinq'd by/Signature:	Ny	Date/Time: 10/1/19 10/2/19 10:00
Received by/Signature: Felly Gel	h & NYC	Date/Time: 10/3/19 1310
E-mail results to:		200110
☐ Brian Stanford	Cel Alvarez	☐ Mike Smith
☐ Willem Mager	☐ Janet Murphy	Ferman Fletcher
Gregg Middaugh	☐ Kaitlin Soukup	☐ Holly Tuttle
Mark Hiley	Martin Estira	Ryan Hunter
☐ Tim Ogden	☐ Justin Day	Eman Jabali
Prudy Stoudt-McRae	Filmon Embaye	
TURN AROUND TIME:		
☐ 1 Hour	24 Hours	3-5 Days
2 Hours	48 Hours	Other 2 Days
4 Hours		

	SAMPLE DATA FORM				
Sample #	Material	Location	Lab		
40115.046-S05	Soil Sample - Lead	Water Tower, base of column, SW, 12" Deep	NVL		
40115.046-S06	Soil Sample - Lead	Water Tower, base of column, SE, 12" Deep	NVL		
40115.046-S07	Soil Sample - Lead	Water Tower, base of column, NE, 12" Deep	NVL		
40115.046-S08	Soil Sample - Lead	Water Tower, base of column, NW, 12" Deep	NVL		
40115.046-S09	Soil Sample - Lead	Water Tower, NW, 3 yards by fence, 6" deep	NVL		
40115.046-S10	Soil Sample - Lead	Water Tower, North, 3 yards by fence, 6" deep	NVL		
40115.046-S11	Soil Sample - Lead	Water Tower, NE, 3 yards by fence, 6" deep	NVL		
40115.046-S12	Soil Sample - Lead	Water Tower, SW, 5 yards by fence, 6" deep	NVL		
40115.046-S13	Soil Sample - Lead	Water Tower, South, 3 yards by fence, 6" deep	NVL		
40115.046-S14	Soil Sample - Lead	Water Tower, SE, 3 yards by fence, 6" deep	NVL		



February 18, 2020

Tim Ogden **PBS Environmental - Seattle**214 E Galer St. Suite. 300

Seattle, WA 98102

NVL Batch # 2002615.00

**RE:** Total Metal Analysis

Method: EPA 7000B Lead by FAA <soil>

Item Code: FAA-03

Client Project: 40115.046

Location: N-A

Dear Mr. Ogden,

NVL Labs received 5 sample(s) for the said project on 2/4/2020. Preparation of these samples was conducted following protocol outlined in EPA 3051/7000B, unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 7000B Lead by FAA <soil>. The results are usually expressed in mg/Kg and ppm. Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely.

Shalini Patel, Lab Supervisor

Enc.: Sample results





# Analysis Report

**Total Lead (Pb)** 



Seattle, WA 98102

Attention: Mr. Tim Ogden

Project Location: N-A



Batch #: 2002615.00

Matrix: Soil 3051/7000B

Method: EPA 3051/7000B Client Project #: 40115.046 Date Received: 2/4/2020 Samples Received: 5

Samples Analyzed: 5

Lab ID	Client Sample #	3ample Wt (g)	RL mg/ kg	Results in mg/Kg	Results in ppm
20023155	S-17	0.2945	34	< 34	< 34
20023156	S-19	0.3013	33	< 33	< 33
20023157	S-20	0.3089	32	< 32	< 32
20023158	S-24	0.2941	34	41	41
20023159	S-26	0.2990	33	< 33	< 33

Sampled by: Client

Analyzed by: Yasuyuki Hida Date Analyzed: 02/18/2020 Reviewed by: Shalini Patel Date Issued: 02/18/2020

Shalini Patel, Lab Supervisor

mg/ kg = Milligrams per kilogram ppm = Parts per million RL = Reporting Limit
'<' = Below the reporting Limit

Note: Method QC results are acceptable unless stated otherwise.

Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2020-0218-1

NVL Batch Number 2002615.00

NVL Batch Number 2002615.00					
TAT 10 Days AH No					
Rush TAT					
Due Date 2/18/2020 Time 2:40 PM					
Email tim.ogden@pbsusa.com					
Fax (866) 727-0140					
cation: N-A A <soil></soil>					

10	tai Numbei	r of Samples	0	Rush Samples				
	Lab ID	Sample ID	Description	A/R				
1	20023155	S-17		A				
2	20023156	S-19		A				
3	20023157	S-20		A				
4	20023158	S-24		A				
5	20023159	S-26		A				

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Client				
Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	2/4/20	1440
Analyzed by	Yasuyuki Hida		NVL	2/18/20	
Results Called by					
☐ Faxed ☐ Emailed					
Special Instructions:		'			

Date: 2/4/2020 Time: 3:48 PM Entered By: Kelly AuVu

## CHAIN of CUSTODY SAMPLE LOG

	Client P	BS Envi	ironmental - Se	attle		NVL Batch	Number			TAVELLE CHAME
Street 214 E Galer St. Suite. 300			Client Job	Number 40	115,046					
	Seattle, WA 98102				Total Samples 13					
	_					Turn Arou	ind Time 11		3 Da	ays 💢 10
Project M	anager M	r Tim C	Onden				2 H	Hrs 🔲 1 Day		*
Project L	_		394011					Hrs            2  Day lease call for T		
,	_					Email	address tim.og			24 MIS
	Phone: (2	06) 233	-9639 Fax:	(866) 72	7-0140		(800) 628-9639		II (206) 25	5-4151
	estos Air		1 (NIOSH 7400)				HERA)   TEM			
Asbe	estos Bulk		I (EPA/600/R-93/						TEM BUL	
	d/Fungus		d Air 🔲 Mold Bu		Rotometer Ca		J (			
☐ TCLF☐ Cr 6	Metals	☐ ICP ☐ GF/	A (ppm	king water /wipe (Area nce Dust	Paint C  Waste V Other	hips in % hips in cm Water	CRA Metals   Arsenic (As)   Barium (Ba)   Cadmium (Cd)   Chromium (Cr)		b)	ther Metals All 3 Copper (Cu Nickel (Ni) Zinc (Zn)
1	nalysis	Silica		rable Dust	W-00					
	tion of Pac	:kage:	_GoodDam	naged (no	spillage)	Severe dama	ge (spillage)			
Seq. #	Lab ID		Client Sample	Number		The second secon	le are, Sample	Volume, etc)		A/R
1			5-15		Hold -		ANALYZE			
2			5-16		Hold	( (				
3			5-17							
4			5-18		Hold	(1				
5			5-19							
6			5-20							
7			5-21		Hold	11				
8			5-22		Hold	c)				
9			5-23		Hold	61				
10			3-24							
11			5-25		Hold	ιì				
12			5-26							
13			5-27		Hold	(1				
14										
15										
		Print B	elow	Sign Belo	NA/		Company		Date	Time
S	ampled by		2n Dister		12		PBS		1/31/20	1300
			her Dickey	11	ma		PBS		2/4/20	1435
	eceived by		D. O	- VM	0,0		1/1/		2/11/	
	nalyzed by		ul,		V		PVL		77/20	1440
	Called by									
resuits	s Faxed by									
Special	Instruction	<b>ons:</b> Un	less requested i	n writing, a	ll samples will	be disposed	of two (2) week	s after analys	sis.	
Hol	ld inc	liceta	el san/	lus Fa	potent.	icl futu	a subs	sīs		